Menlo Park Notebook #229 [N-81-03-23]

This notebook contains one entry by Charles L. Clarke, dated March 23, 1881. It is titled "Magnet Wires for 5 H.P. Motor at Menlo Park" and includes notes and calculations relating to this motor. The label on the front cover is marked "Magnet Wires" and is stamped "Charles L. Clarke." The book contains 280 numbered pages.

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March 23, 1881. 1

Magnet Wires for 5 H.P. Motor at Menlo Park — on which will be 110 volts.

On the regular medium machines are 120 lbs. of No. 10 wire having a resis. of 1.47 ohms.

To economically saturate the magnet requires 5500 ft.lb. and with 110 volts the resistance in magnet circuit should be

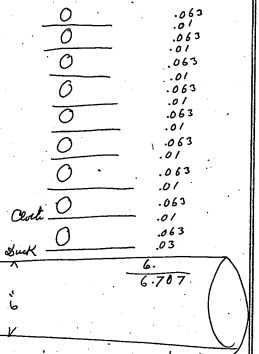
$$\frac{110^2}{x} \times 44.3 = 5500$$

$$x = 97\tfrac{1}{2} \text{ ohms resis.}$$

120 lbs. of No. 19 wire would introduce too high a resistance.

120 lbs. of No. 18 wire would have a ~~re~~ length of

1650 feet and have a resistance of 73 ohms.



The average diameter will be 6.707 inches and circumference 21.07 inches.

The number 18 wire of $\frac{48}{1000}$ will with insulation be $\frac{63}{1000}$

and since the cores are 3 ft. long 5
the no. of turns will be 572
and total length in each
layer 1004 feet – on each
core 8255 feet are required
= $8\frac{1}{4}$ turns.
But if used without cloth
between it would require
9 turns.